Approved For Release 2006/12/06 : CIA-RDP78B04770A000200010008-2

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NPIC/P&DS/D/6-1349
6 May 1966

MEMORANDUM FOR: Deputy Chief, Development Branch, Plans and Development Staff

SUBJECT: Supplement to [redacted] Report 65-9225-1 25X1

1. [redacted] has submitted a supplemental report and other documentation in support of their Feasibility Report on a Multiple Image Integration Printer. The supplement contains the graphs and the answers to questions requested by the Project Monitor on 11 February 1966. [redacted] 25X1 and [redacted] also answered additional questions at a meeting with the Project Monitor at NPIC on 26 April 1966. 25X1

2. The graphs indicate that the transfer function of the proposed printer at 12X magnification is comparable to the results obtained with a typical high quality enlarger at 12X magnification. Graphs are presented for film type 3404, 3401, and tri-X; they indicate that some improvement in resolution can be obtained in coarse grained film but very little improvement in resolution from high definition film. An important point is brought out in Figure 10, the threshold of perception is greatly improved on tri-X for the integrated inputs over the single input. This is also emphasized again in the step wedges of Figure 11.

3. Attachment 3 is a copy of an article that was written in 1959 and published in the Journal of SMPTE, September 1965. This article pretty well substantiates the Image Dissector-Follow Spot technique that is proposed by [redacted] The last paragraph of the article also dwells on the slow scanning procedure that [redacted] would use in the print out mode. 25X1 25X1

4. Other points that were brought out in the report or the meeting are:

a. The limiting resolution for input materials is about 100-150 lines/mm. Any attempt to increase the resolution would require a decrease in input size and an increase in magnification to the CRT.

b. The video bandwidth will be 20 megacycles per second since the slow scan print out technique will be used and the 30 frame per second display rate will not have to be maintained.

Declass Review by NGA

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c. The Image Integration Printer will not appreciably increase resolution but it will improve the information content by improving the contrast of low contrast images, reveal image detail in shadows or low contrast areas by superimposition of images from various missions, and by detecting change in several missions.

d. The main function of the instrument is as a printer and not as a viewer, therefore, the flicker display rate will not be a major factor as it was in the [redacted] contract. 25X1

e. There will be 10 steps of contrast as explained in the report, the computation in the earlier report was based on high contrast and only two steps were used to indicate the maximum effect.

f. Illumination is not a problem when the follow spot technique is used.

g. The time to produce a slow scan print out is approximately one second.

5. All the questions have been answered satisfactorily by [redacted] 25X1 and the state-of-the-art appears to have made major advances since the days of the [redacted] contracts. 25X1 All indications are that the instrument proposed by [redacted] will be a useful instrument for the integration of grain limited images by increasing the signal-to-noise ratio. 25X1

6. [redacted] estimates that it can produce a working instrument with the remaining funds. 25X1 It is recommended that the Office of Logistics be instructed to establish a new completion date and authorize [redacted] 25X1 to proceed with the fabrication of the instrument.

7. Attachment 2 contains changes that [redacted] proposed for an incentive type contract covering Phase II. 25X1 It is recommended that the proposed changes in the incentive contract be rejected. The feasibility study shows that a signal-to-noise ratio of 1.7 is possible and that a maximum resolution of 130 lines may be achieved. The incentive targets they recommend are almost sure of achievement.

[redacted] 25X1
Development Branch, P&DS

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Attachments:

1. [redacted] Report 65-9225-1 25X1
2. [redacted] Letter Dated 8 December 1965
3. Article from J. of SMPTE, dated September 1965
4. [redacted] Supplement Report 25X1

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